



13130 South Yukon Avenue  
Hawthorne, California 90250  
(213) 973-8090  
Telex #66-4494

MODEL 100B TEST REPORT

DATE: 1-18-79

TECHNICIAN D.C.W.

SERIAL NO. 79A0528

LINE VOLTAGE: 120VAC

Power at clip (0.1% T.H.D.)

8 ohms - volts out

Power

Ch. 1

Ch. 2

Mono

23.6v

23.8v

39.3v

69W

70W

193W

Power at clip (0.15% T.H.D.)

4 ohms - volts out

Power

19.6v

19.8v

----

96W

98W

T.H.D. 50 watts - 8 ohms  
(20.1 volts)

20 Hz

.0028 %

.0037 %

20 kHz

.070 %

.055 %

Small Signal Bandwidth

8 ohms

-3 dB Frequency

99 kHz

110 kHz

Noise Level

Output Noise Voltage

20 Hz to 20 kHz

0.46 MV.

0.68 MV.

Quiescent Power

Watts 10

SERIAL NUMBER \_\_\_\_\_  
THROUGH \_\_\_\_\_

OWNER'S MANUAL  
MODEL 100B  
PROFESSIONAL POWER AMPLIFIER

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- IMPORTANT -  
PLEASE READ THIS PAGE BEFORE OPERATING  
YOUR  
BGW POWER AMPLIFIER

Your new BGW power amplifier is designed to provide years of trouble free performance. Observing these few precautions will insure proper operation.

All connections should be made to the power amplifier with the power OFF.

Speaker fuses should be used to afford maximum speaker protection.

Never connect the output of one channel to that of another.

Never connect a direct short from the output of any channel to ground.

Connect the power cord to the proper voltage mains as indicated on the serial number tag. Conversion to another voltage requires internal rewiring.

Do not remove the amplifier's cover. Amplifiers may not be covered under warranty if they are tampered with. There are NO adjustments within. Potentially lethal voltages exist within the amplifier. Refer all service work to an authorized BGW service station.

## DESCRIPTION

The BGW Model 100B is one of the most advanced solid state, fully complementary, bridgeable, stereo power amplifiers available.

Features of the Model 100B include LED metering, separate circuit and chassis grounds, XLR and  $\frac{1}{4}$ " input connectors with transformer sockets, and small size.

The front panel includes two vertical rows of four red LEDs, one row for each channel. The lower LED in each row is the IDLE indicator or pilot lamp. They will be lit whenever the amplifier is turned on.

The two upper LEDs in each row clipping utilize an exclusive BGW circuit. Whenever either channel of the 100B is driven into clipping, a corresponding indicator lights and remains lit for 0.25 seconds. These indicators, which actually indicate loss of feedback, tell the operator that the amplifier is being overdriven and can be invaluable to the engineer who must be sure that every component in his system is producing a clean, distortion-free signal. An inadvertant short-circuited output (with signal) will cause the LED to remain on until the short is removed.

The middle LEDs are connected to a circuit employing a quad comparator integrated circuit to provide an audio level indication of 0.5% and 50% of maximum power output. They provide a valuable tool for total system evaluation in multiple amplifier installations.

Both the circuit and chassis grounds are connected to separate barrier strip terminals on the rear of the amplifier. They are connected together by a removeable link. By removing the link, the circuit grounds of all active units (amplifiers, preamplifiers, mixers, etc.) can be tied to earth ground at a common point. This aids in eliminating ground loops.

Either XLR-type or  $\frac{1}{4}$ -inch phone plugs may be used for input connections. If plug-in transformers are used, the XLR-type connectors are connected. If not, jumpers must be employed in the transformer sockets. See sections 03000 and 03100 for details.

The size of the Model 100B is convenient for a wide variety of applications. However, please note the following precautions:

- 1) Do not use the front panel as the sole support for the amplifier. Side rails or rack shelves should be employed.
- 2) Do not stack Model 100B amplifiers. A minimum of 1  $\frac{3}{4}$  inches above each amplifier should be provided for free air circulation.



The output stages of your amplifier use the most advanced type of transistors available. These large geometry, complementary, power devices have large safe operating area and extended power bandwidth. Electrostatic and other highly reactive speaker systems present no difficulties for the Model 100B. The aluminum heat sink has a total radiating surface of 330 square inches ( $2130 \text{ cm}^2$ ).

All of the semiconductors in the output area are in intimate contact with the heat sink. The bias circuit is also mounted on this isotherm to provide rock steady bias stability with temperature.

The voltage gain circuits are also mounted on the same circuit board. A true operational amplifier integrated circuit, hermetically sealed in a metal can, acts as the front end.

The op-amp is a special unit featuring high speed (15MHz) and a high slew rate (50 volts/microsecond) yet still having very low noise due to its darlington input and careful design. The op-amp stage is followed by a discrete complementary pair acting as an active current source/sink and providing voltage gain. The current source is the ideal way to drive the output stage, which is basically a voltage follower.

This sophisticated circuit design makes for an extremely accurate amplifier. The accuracy of an amplifier is a function of the ratio of the open loop gain to the closed loop gain. In this case, the open loop gain is about 1,000,000. This extremely accurate signal processing enables the amplifier to drive speakers at very high levels while adding absolutely no coloration of its own. Even at milliwatt levels, the output waveform exhibits no sign of crossover distortion.

SPECIFICATIONS

Intermodulation Distortion:	Less than 0.02% from 250 milliwatts to rated power
Small Signal Frequency Response:	+0, -3dB, 1 Hz to 90kHz +0, -0.25 dB, 20Hz to 20kHz
Hum and Noise Level:	Better than 106 dB below 50 watts (unweighted, 20Hz to 20kHz)
Input Sensitivity:	1.0 volts for maximum power output. Voltage gain 26dB (20 times)
Input Impedance:	15k ohms
Damping Factor:	Greater than 400 to 1 referenced to 8-ohms @ 1kHz
Output Impedance:	Designed for any load impedance equal to or greater than 4 ohms
Power Requirements:	Convertible for 100, 120, 200, 220, or 240 volts A.C., 50-60Hz
Semiconductor Complement:	2 Op Amp IC's (equivalent to 44 transistors each), 24 transistors, 2 zener diodes, 12 diodes, 8 LED's, 1 quad comparator
Dimensions:	1.75-inch by 19-inch standard rack front panel by 11.5 inches deep.
Weight:	18 lbs., (8.2 kg) net, 22 lbs., (10 kg) shipping

## SPECIFICATIONS: BGW MODEL 100B

OUTPUT POWER

50 watts minimum sine wave continuous average power output per channel with both channels driving 8-ohm loads over a power band from 20Hz to 20kHz. The maximum Total Harmonic Distortion at any power level from 250-milliwatts to 50 watts shall be no more than 0.1%.

1kHz Power: 60 watts into 8-ohms per channel,  
both channels operating, 0.1% Total Harmonic  
Distortion

60 watts minimum sine wave continuous average power output per channel with both channels driving 4-ohm loads over a power band from 20Hz to 20kHz. The maximum Total Harmonic Distortion at any power level from 250-milliwatts to 60 watts shall be no more than 0.2%.

1kHz Power: 65 watts into 4-ohms per channel, both  
channels operating, 0.1% Total Harmonic Distortion

120 watts minimum sine wave continuous average power output mon-aural driving an 8-ohm load over a power band from 20Hz to 20kHz. The maximum Total Harmonic Distortion at any power level from 250-milliwatts to 120 watts shall be no more than 0.2%.

1kHz Power: 130 watts into 8-ohms, 0.1% Total  
Harmonic Distortion.

All specifications and features are subject to  
change without notice.

POWER MAINS VOLTAGE CONVERSION

NOTICE: Voltage conversion should be done by a BGW authorized service station only.

The Model 100B is shipped from the factory wired for either 120/240-volt operation or 100/220-volt operation. The schematic diagrams below indicate the connections for both arrangements. Please note that these connections apply only to transformers marked with part number 0900-0122. For conversion of units with other transformers, please contact the factory.

In addition to changing the connections, two fuses must be changed according to the following table:

	100V	120V	200V	220V	240V
Inside Fuse	4A S/B	4A S/B	1.75A S/B	1.75A S/B	1.75A S/B
Outside Fuse	2.5A S/B	2.5A S/B	1.25A S/B	1.25A S/B	1.25A S/B



## OPERATION

PRECAUTIONS

1. Speaker destruction is often due to improper equipment operation. This often occurs when someone without the proper appreciation for the components of a high power, high quality music system has the opportunity to change records or adjust levels. The best protection here is caution. Keep the equipment out of the reach of untrained adults and children. Make sure the speaker is properly protected with fuses (Output Connections Section).
2. Never parallel the two amplifier outputs together.
3. When driving any load with an impedance of less than 4 ohms, the load should be isolated from the amplifier with a series capacitor in order to avoid both damage to the load and wasting of output power.
4. If the amplifier continuously blows fuses, something is wrong--do not increase fuse size.
5. Do not connect an input ground lead to an output ground lead; to do so may cause a ground loop and oscillations.
6. Do not operate the amplifier from power mains which exceed the indicated mains voltage by more than 10%.
7. Never connect the output of the amplifier to another power source such as a battery or power main.
8. Do not expose the amplifier to corrosive chemicals such as lye, soft drinks, salt water, etc. Also, never immerse the amplifier in any liquid.
9. Do not remove the amplifier's cover during operations.
10. The amplifier is not intended for high frequency-high power use and should not be used for high power at above 20kHz.
11. Neither the amplifier nor any of its leads should be exposed to areas likely to be struck by lightning.

PROCEDURES

After all connections have been made to the power amplifier, turn the gain controls fully counter-clockwise. Turn on the preamplifier, then turn on the power amplifier. The red LED over the circuit breaker or marked IDLE should light. If it does not, check to see that the amplifier is plugged in to a live power outlet.

With the preamplifier gain controls fully off, advance the left and right power amplifier gain controls about half way clockwise (slit in knob facing upwares). There should be no audible hum; if hum is heard, check the connections between the power amplifier and preamplifier. Now advance the preamplifier gain controls until the desired maximum volume is achieved. Should the preamplifier gain control be in excess of the 3/4 setting, decrease it to half volume and increase the gain controls of the power amplifier to the desired level. The shafts may be locked in this position.

Often, turn-on transients originate in the pre-amp or turner. This is especially true of tube-type units. If this situation arises, turn the amplifier on after the other units have had adequate time to stabilize.

NOTICE

The parts list had not been  
printed at the time this  
amplifier was shipped. For  
a complete set of parts lists,  
please complete the mailing  
label below and return it to:

BGW SYSTEMS  
13130 S. Yukon Ave.  
Hawthorne, CA. 90250

BGW SYSTEMS  
13130 S. Yukon Ave.  
Hawthorne, CA. 90250

100B

TO: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

SERVICE AUTHORIZATION FORM

PLEASE COMPLETE THIS FORM AS COMPLETELY AS POSSIBLE AND RETURN  
TO BGW SYSTEMS BEFORE RETURNING UNIT.

NAME: \_\_\_\_\_ PHONE: \_\_\_\_\_

ADDRESS: \_\_\_\_\_  
(CITY) (STATE) (ZIP)

UNIT: \_\_\_\_\_  
MODEL SERIAL NUMBER

1. DESCRIBE SYMPTOMS:
2. WHICH CHANNELS (S) EXHIBITS THE PROBLEMS?
3. WHAT OTHER EQUIPMENT WAS INVOLVED?

	MANUFACTURER	MODEL NO.
PREAMP	_____	_____
SPEAKERS	_____	_____

4. UNDER WHAT CONDITIONS DOES THE PROBLEM OCCUR (CHECK THOSE  
THAT APPLY).

- A. ALL THE TIME \_\_\_\_\_
- B. AFTER AWHILE \_\_\_\_\_
- C. AT HIGH VOLUME LEVELS \_\_\_\_\_
- D. AT HIGH TEMPERATURES \_\_\_\_\_
- E. OTHER (EXPLAIN) \_\_\_\_\_

5. HOW OFTEN DID THE PROBLEM OCCUR?
6. WHAT DID YOU DO TO ISOLATE THE PROBLEM TO THE POWER AMP?
7. FURTHER COMMENTS:

IT IS MORE EXPEDIENT TO CALL YOUR DEALER OR OUR FACTORY EXPLAINING  
THE NATURE OF YOUR PROBLEM. IN MANY INSTANCES THE PROBLEM CAN BE  
SOLVED WITHOUT RETURNING THE UNIT TO THE FACTORY. WARNING: THE  
UNIT MUST BE RETURNED IN AN ORIGINAL FACTORY CONTAINER. IF YOU DO  
NOT HAVE ONE, WE WILL PROVIDE A REPLACEMENT FOR \$14.00. FACTORY  
AUTHORIZED WARRANTY REPAIR STATIONS ARE LOCATED THROUGHOUT THE U.S.  
CALL YOUR DEALER OR THE FACTORY FOR THE LOCATION OF THE SERVICE  
STATION NEAREST YOU.



PLACE  
STAMP  
HERE



13130 SOUTH YUKON AVENUE  
HAWTHORNE, CALIFORNIA 90250

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## WARRANTY REGISTRATION

Please fill out and return this card within 2 weeks from date of purchase.

NAME: \_\_\_\_\_ DATE PURCHASED: \_\_\_\_\_

ADDRESS: \_\_\_\_\_ PHONE: \_\_\_\_\_

CITY: \_\_\_\_\_ STATE: \_\_\_\_\_ ZIP: \_\_\_\_\_

PURCHASED FROM: \_\_\_\_\_  
Dealer

\_\_\_\_\_  
Address

\_\_\_\_\_  
City State Zip

MODEL NUMBER: \_\_\_\_\_

SERIAL NUMBER: \_\_\_\_\_

PURCHASE PRICE: \_\_\_\_\_

For What Purpose Is The Unit Intended?

Home \_\_\_\_\_  
Studio \_\_\_\_\_  
Sound Reinforcement \_\_\_\_\_  
Other (explain) \_\_\_\_\_

Is this amplifier a replacement for an existing unit?

If yes, what kind? \_\_\_\_\_

Why did you choose a BGW power amplifier?

____ Dealer Recommendation	____ Magazine Advertisement
____ Sound Quality	____ Technical Design
____ Friend's Recommendation	____ Other _____

COMMENTS:

PLACE  
STAMP  
HERE



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